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ABSTRACT

This paper presents a discussion of the Piagetian theory of knowledge development in relation to early childhood education. It is suggested that Piaget's research has often been used by education to determine the sequence in which concepts should be presented to children rather than to determine the nature of the classroom experience children should have. Educators are encouraged to become more concerned with "how" children are taught rather than "what" they are taught; the "how" being derived from an understanding of the factors involved in the child's transitions from the sensorimotor period of infancy to the concrete-operational thinking of childhood and to the formal operations that characterize the thinking of the mature adult. Pedagogical implications of Piaget's process of equilibration or self-regulation for classroom teachers are suggested: (1) teachers should listen more than tell, framing questions designed to promote reflection and further inquiries by the child; (2) teachers should promote the child's interaction with other children; and (3) teachers should gain a perspective on education as essentially a "do-it-yourself" process, in which the teacher's role is primarily to facilitate learning. (CS)

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PIAGET IN ACTION

Millie Almy

Early childhood teachers have come a long way since the 1960's when their first question in response to the statement that Piaget's theories might be useful to them was, "How do you spell it?" Many teachers not only know how to spell Piaget but have some notions about what it might mean to put his theories in their classrooms. Many teachers are actually trying out his theories.

As word about Piaget has spread, psychologists, teachers and others have tried to accommodate to ideas that often run counter to the behaviorist tradition in which most of us were brought up. Not surprisingly we have assimilated Piaget's concepts to our own cognitive structures in ways that have often distorted and changed them. In fairness it should also be noted that Piaget, although not altering the basic grand design of the theory that he began to sketch some fifty years ago, has explored new problems, made discoveries, modified some of his views and strengthened others. Meanwhile investigators in this country and around the world have conducted research, some of which is strongly supportive of the theory and expands on it, and some of which calls certain elements into question. Perhaps one can say that the theory is dynamic and does not stand still for the educator who wishes to put it to use in the classroom. Despite this I think certain elements of the theory are basic and can provide some guidance to the educators.

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Educators often identify Piaget as a learning theorist. This is an example of the way we tend to assimilate new ideas to old structures. Piaget's basic concern is not with learning, that is with changes in behavior that cannot be attributed to maturation, but rather with the development of knowledge. Accordingly, he cannot be identified with the majority of psychologists who have influenced American education.

When the educator grasps the fact that Piaget's concern is with knowledge, or with knowing, and not with learning, he or she may only gradually grasp the further distinctions that Piaget makes. For example, physical knowledge, knowledge that can be inferred directly from observation of the physical world, differs from mathematico-logical knowledge, knowledge that the individual constructs from his own actions on the physical world. Again, it may be some time before the distinctions between figurative and operative knowledge become clear. Figurative knowing is static and tied to immediate perception. Operative knowing transcends the immediately given and can deal systematically and logically with transformations. It is the latter kind of knowing that, for Piaget, marks the mature intelligence, and in the long run enables the individual to deal more and more effectively, not only with physical knowledge, but with social and moral knowledge as well.

Whatever difficulty many educators have had with the different kinds of knowledge postulated by Piaget's theory, most have, I think, had less trouble accommodating to the idea that the mature intelligence evolves through a series of stages, and that the thinking of the child differs from that of the adult not merely in the quantity of concepts available but qualitatively as well. Even here, however, there is evidence that the theory has been assimilated to the traditional ways of schooling. Piaget's research has undoubtedly more often been used to determine the sequence in which concepts should be presented to children than to determine the nature of the classroom experience the children should have. In other words, educators have more often called on Piaget to determine <u>what</u> children should be taught than <u>how</u> they should be taught. It is the <u>how</u> that is most important if we are to see Piaget truly in action in the classroom.

Out of the hundreds of articles and books that Piaget has written only a tiny few that deal with matters of education. These suggest that the <u>how</u> is to

be derived from an understanding of the factors that are involved in the child's transitions from the sensori-motor period of infancy to the concrete-operational thinking of childhood and finally to the formal operations that characterize the thinking of the mature adult.

Piaget identifies four factors that contribute to these transitions. Of the four, the first three--maturation, action on the physical environment, and social interaction--are all involved in the fourth, the process of equilibration or self-regulation.

The fact that maturation is one factor influencing the way the child's knowledge develops does not imply, as many psychologists and educators have assumed, that Piaget espouses an emerging curriculum dictated only by the current interests and capabilities of the child. It does suggest, however, that certain kinds of curricular activities are more appropriate for certain ages than for others.

As Piaget has put it, "We must recognize the existence of a process of mental development; that all intellectual material is not invariably assimilable at all ages; that we should take into account the particular interests and needs of each stage. It also means, . . . that environment can play a decisive role in the development of the mind; that the thought contents of the ages at which they occur are not immutably fixed; that sound method can therefore increase the students' efficiency and even accelerate the students' efficiency and accelerate their spiritual growth without making it any less sound. (Piaget, Science of Education and the Psychology of the Child, Orion Press, New York, 1970, p. 173)

Just as the recognition of the factor of maturation does not mean a curriculum that is tied to what the child can do today, so an emphasis on the child's action on his physical environment does not mean a curriculum that is only manipulative. The child grows in understanding of his world as he tests the ways it

responds to his investigations and as he observes the effects his own actions have. Such manipulation is essential if he is to develop real comprehension. I am convinced that the reason most children are as intelligent as they are in the all too prevalent "look and say" curriculum to be found in most kindergartens and first grades and in too many preschools comes from the fact that they do actively explore their environment when they are outside the four walls of the classroom. On the other hand, children left entirely to their own devices miss many opportunities to derive fuller meaning from their experience. Social interaction is essential to move an ordinary experience with the physical environment to what Hans Furth calls "higher level" thinking.

The teacher who sees that the child who has just observed that "big" things float soon has an encounter with a big thing that sinks contributes to the child's development, even if she says not a word. But words may also facilitate development as when the teacher of an older child having observed the child arranging and rearranging a set of cubes in different patterns inquires as to what he has found out through his manipulations. While the teacher in the traditional classroom spends much of her time <u>telling</u> children about the world and then questioning them to see whether they have remembered what they have been told, Piagetian theory seems to call for a teacher who listens more than she tells and whose questions are designed to promote reflection and further inquiry on the part of the child.

Piagetian theory also emphasized the importance of the child's interaction with other children. As the child confronts the beliefs of those who see things differently than he does, as he adapts his wishes to theirs or theirs to his in ongoing socio-dramatic play, as he contests with them in structured games, he becomes less egocentric and better able to take viewpoints other than his own.

The influence on the child's development of his maturation, of the experiences he has with physical objects, with his peers and with adults, are all subsumed under the process of equilibration or self-regulation. This aspect of Piaget's theory has given both psychologists and educators difficulty. The process, Piaget maintains, is continuous with other organic functions. To American psychologists who have been trained to think more like physicists than like biologists this concept has seemed incomprehensible. To the educator who has come to think of schooling as a process in which a competent teacher moves a group of children from one grade level to the next, proving her accomplishment by the results of the achievement tests, the concept must be anathema. Essentially, equilibration, from the viewpoint of the child, is a "do-it-yourself" process. Considering his own life history, he may need much or little physical experience or confrontation with his peers or questioning by his teachers in order to accommodate his existing cognitive structures to a new idea and the way that he assimilates that idea is always a matter of what he already knows or believes. Piaget does not suggest that because it is the child who is ultimately in control of his own cognitive development the teacher is thereby freed from responsibility. But he does caution with regard to mathematico-logical structures, "children have real understanding only of that which they invent themselves, and each time that we try to teach them something too quickly we keep them from reinventing it themselves."

As I reflect on the complexities of Piaget's theory I wonder not that so few teachers have tried to put it in action but rather that so many are doing so. When they do, they opt to focus not on behavior which is readily observable, but on development which can only be inferred. They choose to have classrooms that are filled with a variety of objects and for children that are actively engaged with them, rather than tidy classrooms where pencil, paper and workbooks can be neatly stored and children sit quietly in their seats. Their classrooms will

inevitably hum with conversation and discussion. The essential difference between their classroom and others, however, lies not so much in the ways they appear or sound as in the teacher's awareness of the ways each child thinks and the provisions she makes to support and facilitate that thinking. Such provision goes beyond the narrowly cognitive and takes into account each child's concerns and interests as well.

How do teachers who want to put Piaget's theory into action go about it? Hans Furth says that teachers prefer to begin trying certain activities with children rather than getting into the theory. I suspect that is generally, although not always, true. But what activities? The answer to this, I presume, depends not only on the teacher's personal intellectual predilections, but also on which of the many interpreters of Piaget's theory he or she encounters. Some interpreters stay close to the theory and rely on it almost to the exclusion of other developmental theories. Others are more eclectic, calling for example, on Erikson and Heinz Werner for further illumination of psychological processes and on Dewey and Whitehead for amplification of the pedagogical. Some interpreters believe that a good place for teachers to start is with the tasks that Piaget has posed children. Some have even incorporated such tasks into the curriculum. For others, as for some of my colleagues at the University of California, Berkeley, the tasks are a means of getting the teacher tuned in to the thought of children. In their program, student teachers, whether destined to teach at the early childhood, elementary, or seondary levels, conduct Piagetian interviews with youngsters at all the levels.

Today we are going to hear from only two of the many programs that have been attempting to put Piaget into action in the classroom. Both programs are intended for preschool children. In both cases the representatives of the program have come prepared to help us focus on what is involved in teaching in accord with a specific theory.

We will hear first from Rheta de Vries and Maureen Ellis of Chicago Circle Children's Center, where they have been implementing the Piagetian curriculum developed by Constance Kamir. Dr. De Vries, who has conducted several Piagetian research projects, is associate professor and head of the Department of Human Development and Learning, University of Illinois, Chicago Circle. Maureen Ellis is a teacher in the Children's Center, and was formerly a kindergarten teacher in the Evanston Piagetian project.

Our second team consists of Irving Sigel and Betty Bryant from the Center for Child Care Research at Educational Testing Service, Princeton. Irv Sigel is a developmental psychologist with a long involvement in nursery education as well as an impressive record of research. Betty Bryant is director of the educational program in the Center for Child Care Research, having recently moved there from Harvard, where she was a graduate student.

The Chicago Circle team will address the question of moving from generalities to specifics. The ETS team will focus on the difficulties for the teacher in trying to follow a specific theory.

Each team has agreed to take no more than a half hour, so that there will be ample time for your questions and comments.

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